

IWNC 2009 Preliminary Program

Sept. 1, 2009

Sept 23 (Wed)

9:00 – 9:45 **Registration and Coffee, Tea, Drinks, and Snacks**

9:45 – 10:00 **Opening** (Main Conference Hall) *Ferdinand Peper, Chair of IWNC (National Institute of Information and Communications Technology; NICT, Japan)*

10:00 – 10:15 **Welcome** (Main Conference Hall) *Kazuhiro Oiwa, Director-General of Kobe Advanced ICT Research Center (NICT)*

10:15 – 11:05 **I-1 Session: Natural Computing Models** (Main Conference Hall)

10:15 – 11:05 Invited Talk: *Bruce J. MacLennan (University of Tennessee, USA)*, Models and mechanisms for artificial morphogenesis

11:05 – 12:00 **Preparation for Poster Presentations**

12:00 – 13:30 **Lunch**

13:30 – 15:10 **I-2 Session: Physics & Computation 1** (Main Conference Hall)

13:30 – 14:20 Invited Talk: *Anirban Bandyopadhyay (National Institute of Materials Science, Japan) et al.*, Computational feasibility of conventional cellular automata problems on an organic molecular matrix

14:20 – 14:45 Contributed Talk: *Naoya Tate (University of Tokyo, Japan) et al.*, Parallel retrieval of nanometer-scale light-matter interactions for nanophotonic systems (21)

14:45 – 15:10 Contributed Talk: *Hiroto Sakai (Osaka University, Japan) et al.*, Photonic switching of DNA's position that represents the internal state in photonic DNA automaton (24)

15:10 – 15:30 **Coffee/tea/drink Break** (Room 4-5-6)

15:30 – 16:30 **I-3 Poster Session** (Room 4-5-6)

- P1** *Minori Nagata (Yokohama National University, Japan) et al.*, Top-predator survivor region is affected by bottom-prey mortality rate on the Monte-Carlo simulation in lattice model (3)
- P2** *Yu-an Zhang (University of Miyazaki, Japan) et al.*, Effect of mutation to distribution of optimal solution in Genetic Algorithm (4)
- P3** *Akiyasu Tomoeda (Meiji University, Japan) et al.*, A compressible fluid model for traffic flow and nonlinear saturation of perturbation growth (5)
- P4** *Katsunobu Imai (Hiroshima University, Japan) et al.*, On designing gliders in three-dimensional Larger than Life cellular automata (19)
- P5** *Ryousuke Ishiwata (Tokyo Medical and Dental University, Japan) et al.*, Instability of collective flow in two-dimensional optimal velocity model (23)
- P6** *Stefan Haflidason (University of Manchester, UK) et al.*, Quantifying the severity of the permutation problem in neuroevolution (26)
- P7** *Teruya Yamanishi (Fukui University of Technology, Japan) et al.*, Firing correlation in spiking neurons with Watts-Strogatz rewiring (30)
- P8** *Susumu Adachi (National Institute of Information and Communications Technology, Japan)*, Effect of population size in extended parameter-free Genetic Algorithm (31)
- P9** *Koutarou Tachibana (University of Osaka Electro-Communication, Japan) et al.*, A transition rule set for the first 2-D optimum-time synchronization algorithm (32)
- P10** *Takuya Yamawaki (University of Osaka Electro-Communication, Japan) et al.*, A two-dimensional optimum-time Firing Squad synchronization algorithm and its implementation (33)
- P11** *Mehdi Torshizi (University of Payam-e Noor, Iran)*, Functional sized population magnetic optimization algorithm (35)
- P12** *Wai Kit Wong (Multimedia University, Malaysia) et al.*, Quaternion based thermal condition monitoring system (36)
- P13** *Naofumi Katada (University of Hyogo, Japan) et al.*, Noise effects on chaos in chaotic neuron model (37)
- P14** *Masashi Oiso (Hiroshima University, Japan) et al.*, Evaluation of generation alternation models in evolutionary robotics (38)

16:30 – 18:10 **I-4 Session: Biocomputing 1** (Main Conference Hall)

- 16:30 – 17:20 Invited Talk: *Milan N. Stojanovic (Columbia University, USA) et al.*, Approaches to molecular computing and robotics

17:20 – 17:45 Contributed Talk: *Shogo Hamada (Tokyo Institute of Technology, Japan) et al.*, Extending the geometrical design of DNA nanostructures (15)

17:45 – 18:10 Contributed Talk: *Miki Hirabayashi (National Institute of Information and Communications Technology, Japan) et al.*, Design of true random one-time pads in DNA XOR cryptosystem (13)

Sept 24 (Thu)

9:30 – 12:00 **II-1a Special Session: Unconventional Communication** (Main Conference Hall)

Organizers: Naoki Wakamiya, Kenji Leibnitz (Osaka University, Japan)

9:30 – 10:20 Invited Talk: *Masayuki Murata (Osaka University, Japan)*, Biologically-inspired network architecture for future networks

10:20 – 10:50 **Coffee/tea/drink break** (Room 4-5-6)

10:50 – 12:00 **II-1b Special Session: Unconventional Communication – Continued** (Main Conference Hall)

10:50 – 11:25 Invited Paper: *Sasitharan Balasubramaniam (Waterford Institute of Technology, Ireland) et al.*, The effect of community on distributed bio-inspired service composition

11:25 – 12:00 Invited Paper: *Yuki Moritani (NTT DoCoMo, Japan) et al.*, A molecular communication system

12:00 – 13:30 **Lunch**

13:30 – 15:10 **II-2 Session: Biocomputing 2** (Main Conference Hall)

13:30 – 14:20 Invited Talk: *Toshiyuki Nakagaki (Hokkaido University, Japan) et al.*, Negotiating multi-purpose optimization problem by means of the adaptive method inspired by a single celled organism *Physarum*

14:20 – 14:45 Contributed Talk: *Yasuhiro Suzuki (Nagoya University, Japan)*, Fluctuation induced structure in chemical reaction with small number of molecules (28)

14:45 – 15:10 Contributed Talk: *Peter Leupold (Kyoto Sangyo University, Japan) et al.*, Computing by observing changes (20)

15:10 – 15:35 **Coffee/tea/drink break** (Room 4-5-6)

15:35 – 17:15 **II-3 Parallel Session: Physics & Optimization** (Main Conference Hall)

15:35 – 16:00 Contributed Talk: *Tsuyoshi Ogiro (Hiroshima University, Japan) et al.*,
Universality of 2-state 3-symbol reversible logic elements – a direct simulation method of
a Rotary Element (10)

16:00 – 16:25 Contributed Talk: *Susumu Adachi (National Institute of Information and
Communications Technology, Japan)*, Implementation of Rotary Element with Quantum
Cellular Automata (18)

16:25 – 16:50 Contributed Talk: *Siwei Jiang (China University of Geosciences, China) et al.*,
A new differential evolution for multiobjective optimization by uniform design and
minimum reduced hypervolume (12)

16:50 – 17:15 Contributed Talk: *Masud Hasan (BUET, Bangladesh) et al.*, An optical solution
for the subset sum problem (6)

15:35 – 17:15 **II-4 Parallel Session: Model Simulation** (Room A)

15:35 – 16:00 Contributed Talk: *Daichi Yanagisawa (University of Tokyo, Japan) et al.*,
Methods for shortening waiting time in walking-distance introduced queueing systems
(14)

16:00 – 16:25 Contributed Talk: *Ryosuke Nishi (University of Tokyo, Japan) et al.*, Simulation
and theoretical comparison between “Zipper” and “Non-Zipper” merging (17)

16:25 – 16:50 Contributed Talk: *Vincenzo Bruno (University of Calabria, Italy) et al.*,
Temperature effects on olive fruit fly infestation in the FlySim Cellular Automaton model
(34)

16:50 – 17:15 Contributed Talk: *Takuya Kuroda (Nagoya University, Japan) et al.*,
Application of improved grammatical evolution to Santa Fe trail problems (7)

18:30 – 20:30 **Banquet**

Sept 25 (Fri)

9:30 – 10:20 **III-1 Session: Physics & Computation 2** (Main Conference Hall)

9:30 – 10:20 Invited Talk: *Laszlo B. Kish (Texas A&M University, USA) et al.*, Noise-based
logic and computing: from Boolean logic gates to brain circuitry and its possible hardware
realization

10:20 – 10:45 **Coffee/tea/drink break**

10:45 – 12:00 **III-2 Parallel Session: Cellular Automata** (Main Conference Hall)

10:45 – 11:10 Contributed Talk: *Susumu Adachi (National Institute of Information and Communications Technology, Japan) et al.*, Universal 2-state asynchronous Cellular Automaton with Inner-Independent transitions (22)

11:10 – 11:35 Contributed Talk: *Hugues Berry (INRIA, ALCHEMY, France) et al.*, Robustness of the critical behavior in a discrete stochastic reaction-diffusion medium (8)

11:35 – 12:00 Contributed Talk: *Soichiro Tsuda (University of Southampton, UK)*, Complex emergent behavior in Ad Hoc Cellular Automata (29)

10:45 – 12:00 **III-3 Parallel Session: Physics and Computation 3** (Room A)

10:45 – 11:10 Contributed Talk: *Jun Ohkubo (University of Tokyo, Japan)*, Pump current as a signal transformation (1)

11:10 – 11:35 Contributed Talk: *Takuya Machida (Yokohama National University, Japan) et al.*, Limit theorem for a time-dependent coined quantum walk on the line (2)

11:35 – 12:00 Contributed Talk: *Jacob D. Biamonte (Oxford University, UK)*, The time dilation effect as a computational resource (25)

12:00 – 13:30 **Lunch**

13:30 – 15:15 **III-4 Session: Physics & Computation 4** (Main Conference Hall)

13:30 – 14:05 Invited Paper: *Manish Dev Shrimali (LNM Institute of Information Technology, India)*, Asynchronous dynamics and nonuniform coupling of coupled chaotic systems

14:05 – 14:40 Invited Paper: *Jia Lee (National Institute of Information and Communications Technology, Japan) et al.*, Efficient computation in Brownian Cellular Automata

14:40 – 15:15 Invited Paper: *Andrew K. Kikombo (Hokkaido University, Japan) et al.*, Neuro-morphic circuit architectures employing temporal noises and device fluctuations to enhance signal-to-noise ratio in pulse-density modulation

15:15 – 15:30 **Closing** (Main Conference Hall)

Note: numbers between brackets after titles refer to paper numbers, for authors' reference